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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/914,838	09/25/2001	Christopher T Bartlett	540-317	4372
23117	7590	08/06/2004	EXAMINER	
NIXON & VANDERHYE, PC 1100 N GLEBE ROAD 8TH FLOOR ARLINGTON, VA 22201-4714			PRIZIO JR, PETER	
			ART UNIT	PAPER NUMBER
			2674	
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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/914,838	BARTLETT, CHRISTOPHER T
	Examiner Peter Prizio	Art Unit 2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 17 May 2004.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-17 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-17 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 25 September 2001 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

## DETAILED ACTION

### ***Response to Amendment***

1. This action is in response to preliminary amendment filed on 17 May 2004.

### ***Claim Status***

2. Claims 1 – 17 pending.
3. Claims 1 – 17 rejected.

### ***Claim Rejections - 35 USC § 112***

4. Claims 1 – 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification lacks enablement with regards to the optical correlator and the processor. It has not been shown how the input to the optical sensor 12 becomes an optical image for optically correlating the optical image with an optical image representative of at least one of the markings. The means for determining the orientation of the head mounting using the output from the optical correlator when it detects there is a correlation between the images has not been disclosed. The application makes reference to the processor 28 having stored images, however it is unclear how the processor utilizes the output of CCD camera 56 and the stored images to determine movement and how the processor outputs an optical signal for use in the

optical correlator 26. Further, it is unclear how the symbol generator 6 functions. Lastly, reference numeral 10 in figure 1 has not been disclosed and could be an important element in the invention, having an output to the optical correlator and an input from the symbol generator. It is unclear to one of ordinary skill in the art to be able to replicate this invention with the provided disclosure.

### ***Claim Rejections***

5. The following claim rejections are made in view of the serious 35 USC 112 (first paragraph) rejections and therefore contain some uncertainty as the claims are read as best understood from the un-enabled specification.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 1 – 4, 10 – 12, 15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 6,064,749 to Hirota et al. (Hirota).

8. Regarding claims 1 and 2, Hirota (Figs. 1, 2, & 4) teaches a head mounting (20), an optical sensor (22) located at a fixed point relative to a datum which can be the same as the head mounting (column 5, lines 40 – 44), a plurality of distinguishable (column 10, lines 41 – 43) markings (L1 – L3) each of which when in use is located in fixed

relation with a respective known point (column 7, lines 20 – 27) characterized by an optical correlator (42) for optically correlating the optical image from the optical sensor (22) with an optical image representative of at least one of the markings (column 11, lines 30 – 50), and means for determining the orientation of the head mounting using the output from the optical correlator when it detects there is correlation between the images (column 13, 30 – 43).

9. Regarding claim 3, Hirota (Fig. 5), as applied to claim 1, further teaches the, or each, distinguishable marking comprises a spatial pattern (column 10, lines 32+).

10. Regarding claim 4, Hirota (Fig. 5), as applied to claim 1, further teaches the, or each, distinguishable marking is defined in part at least by the color of the marking (column 10, lines 32+).

11. Regarding claim 10, Hirota, as applied to claim 1, further teaches the means for determining the orientation of the head mounting orientation by determining where within the field of view of the optical sensor a marking is located (column 6, lines 33 – 37 & column 13, lines 30 – 43).

12. Regarding claim 11, Hirota (Fig. 1), as applied to claim 1, teaches a video camera (22) for capturing the optical image and producing an electrical signal representative of it and converting the electrical signal back to an optical image (column 6, lines 7 – 16).

13. Regarding claim 12, Hirota (Fig. 1), as applied to claim 1, further teaches a second optical sensor (24) located at a second known fixed point relative to the head mounting or to the fixed datum.

14. Regarding claim 15, Hirota (Figs. 1, 2, & 4) teaches a head mounting (20), an optical sensor (22) located at a fixed point relative to the head mounting (column 5, lines 40 – 44) and operable to collect optical scene data representative of the users environment, an optical correlator (42) for correlating optical scene data previously captured by the optical sensor (22) to determine the relative movement of the head mounting between capture of said optical scene data (40, column 7, lines 55 - 57), and means for determining the orientation of the head mounting from said relative movements (column 13, 30 – 43).

15. Regarding claim 17, Hirota, as applied to claim 15, teaches one or more visibly distinguishable (column 10, lines 41 – 43) markings (L1 – L3) at respective known points (column 7, lines 20 – 27) fixed relative to the datum.

#### ***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota, as applied to claim 1, in view of US Patent 5,812,257 to Teitel et al. (Teitel). Hirota teaches colored concentric circles for use as distinguishable markings wherein each marking is a substantially collimated image (column 11, lines 50-60), but does not disclose a marking generator, however, Teitel (Fig. 3) teaches using marking generators

(14A, 14B) and further teaches the color of the markings is defined by the wavelength of the light produced by each marking generator (column 3, lines 28 – 35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the non-active landmarks of Hirota with the marking generators as taught by Teitel for the purpose of distinguishing the signals from one another. One skilled in the art would have been motivated to generate the claimed invention with a reasonable expectation of success.

18. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota, as applied to claim 15, in view of US Patent 5,424,556 to Symosek et al. Symosek et al. teaches a head tracker system used in an aircraft in which the environment comprises at least part of the cockpit (column 1, lines 9 – 25).

19. It would have been obvious to one skilled in the art to apply the head tracker as taught by Hirota in the cockpit of an aircraft as suggested by Symosek et al. for the benefit of using a head tracker in an aircraft.

### ***Conclusion***

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Response to Arguments***

21. Applicant's arguments filed 17 May 2004 have been fully considered but they are not persuasive.

22. The objections to the abstract and the specification have been withdrawn in view of the amendments.

23. In response to applicant's arguments that the specification is enabled for the interrelationship of the optical correlator and the processor on the last line of page 10 through line 3 of page 12. The applicant specifically argues, "the operation of optical correlators is well known and accordingly operation will not be discussed in detail," however the optical correlators are critical to applicant's invention and therefore must be disclosed in detail. The fact that they are known does not compensate for the deficiency of the specification when the optical correlators are essential subject matter of applicant's claimed invention.

24. The applicant continues by providing a discussion of the optical correlator, however the function of the optical correlator is not the full concern, but more so the interaction between the optical correlator and the processor. The details regarding how the correlator is controlled, how the processor processes the signals from the correlator

and how the processor and the correlator are interconnected is essential to the claimed invention. Further, the details relating to the symbol generator and its operation have not been fully disclosed.

25. Lastly, applicant argues the "quick release connector" reference numeral 10 has been fully disclosed, however there is no mention as to what types of signals (electrical, optical, etc.) are going into and out of the connector whereas to provide full enablement of the system as a whole and its interaction with the HMD.

26. With regards to the art rejections, applicant argues with respect to all claims that Hirota fails to teach the claimed invention since it does not teach an optical correlation. However, in view of the serious rejection over 35 USC 112 (first paragraph) the optical correlation, when read in a manner representative of the specification, has some uncertainty regarding how it is performed. Therefore Hirota teaches performing a correlation using an image analyzer to determine landmarks in images and then determines a correlation between the images that can be used to determine head motion (column 13, lines 30 – 42).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Prizio whose telephone number is (703) 305-5712. The examiner can normally be reached on Monday-Friday (7:30-5:00), alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on (703) 305-4709. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Peter Prizio  
Examiner  
Art Unit 2674  
July 28, 2004

Prizio

PP

  
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